Amendments to the Specification:

Please replace the paragraphs beginning on page 3, line 29 – page 7, line 13, with the following rewritten paragraphs:

--Referring to Figures 1 to 18 of the drawings and according to a first embodiment of the invention, a radial engine 1 includes an engine block 2 with a circular recess 3 on each side of the block, and a web 4 dividing the recesses. Each one of a pair of cam plates ~~6~~ 5 and ~~7~~ 6 is supported on a cylindrical shaft ~~8~~ 7 (see especially Figures 11 and 12) for rotation about an axis ~~9~~8. Each plate ~~6~~ 5 and ~~7~~ 6 is spaced on an opposite side of the web and is accommodated in a respective one of the recesses 3. Eight cylinders ~~10~~ 9 are regularly circumferentially spaced around the periphery of the engine block and fixedly connected to the engine block. The cylinders extend radially outwardly with respect to the axis from adjacent the plates. For the sake of simplicity, the cylinder heads and the fuel/air intake manifolds have been omitted from the drawings.

The plates ~~6~~ 5 and ~~7~~ 6 are substantially enclosed within the recesses 3 by a pair of engine block covers ~~11~~ 10 and ~~12~~11. The engine block 2 and the covers ~~11~~ 10 and ~~12~~ 11 are fixed with respect to each other by Allen screws ~~13~~ 12 which pass through holes ~~14~~ 13 in the covers and block. The skilled addressee will appreciate that the parts of the engine described above may be of various materials, including, where appropriate, brass, steel, or aluminium. Furthermore, the parts may, as appropriate, be cast or machined. The cylinders ~~10~~9, in one embodiment, are bolted to the engine block 2, although in other embodiments the cylinders may be cast or machined to be integral with the engine block.

The engine block 2 has a circular central aperture ~~15~~14. Each one of a plurality of bores ~~16~~ 15 of generally circular cross-section extends radially from the outer rim ~~17~~ 16

of the engine block 2 to the central aperture ~~15~~14. The bores ~~16~~15 are defined by sidewalls ~~18~~17, and have a cross-sectional diameter greater than the thickness of the web 4. Accordingly, the sidewalls have gaps that open through the opposite outer surfaces of the web to define a longitudinal slot ~~19~~18.

The shaft ~~8~~7 has a cylindrical broad shaft-portion ~~20~~19 and a cylindrical narrow shaft-portion ~~21~~20. The narrow shaft-portion ~~21~~20 is of smaller diameter than the broad shaft-portion ~~20~~19 so that there is a shoulder ~~22~~21 between the portions. The narrow shaft-portion ~~21~~20 includes a radially outer screw thread ~~23~~22 that extends from a free end ~~24~~23 of the narrow shaft-portion towards a position closer to the shoulder ~~22~~21.

The plates ~~6~~5 and ~~7~~6 are disposed to face each other with the web 4 between them. Moreover, the plates ~~6~~5 and ~~7~~6 are spaced apart by a spacer ~~25~~24 (see especially Figures 15 and 16) that extends through the central aperture ~~15~~14 of the engine block 2.

Each plate includes a pair of spaced opposed walls ~~26~~25 extending from the plate surface to define a continuous loop. In this embodiment, the walls are parallel and extend into the plate to define a substantially "figure 8" shaped groove ~~27~~26 in the plate, as illustrated in Figure 9. In this embodiment, the grooves are machined into or formed on their respective plates. In alternative embodiments (not shown), the plate includes a recess, the perimeter of the recess defining the outer wall of the groove. In these alternative embodiments, a complementary second plate member fits within the aperture to define the inner wall of the groove.

In another embodiment of the invention (not shown), the walls extend outwardly from the plate surface to define a protruding continuous ridge and the cam follower

includes a channel into which the ridge extends, the follower being configured to traverse the ridge as the plate rotates.

The plates are rotationally fixed with respect to each other by locating pins ~~28~~ 27 (see Figures 17 and 18) disposed inside the perimeter of the grooves ~~27~~26, such that the grooves are aligned with each other.

A locking element ~~32~~ 28 (see especially Figures 13 and 14), having a spigot-shaped portion ~~33~~ 29 and a nut ~~34~~30, is screwed onto the screw-threaded end ~~23~~ 22 of the narrow shaft portion ~~21~~20. The nut ~~34~~ 30 is secured against the plate 5 to hold both plates captive against the shoulder ~~22~~21. In one embodiment, the plates ~~6~~ 5 and ~~7~~ 6 are constrained to rotate with the shaft ~~8~~ 7 by means of a key and keyway (not shown). In another embodiment, this is achieved by means of splines (also not shown).

The engine block cover ~~12~~ 11 has a socket-shaped portion ~~35~~ 31 that defines a central aperture ~~36~~ 32 through which the broad shaft-portion ~~8~~ 7 extends as a running fit.

The other engine block cover ~~11~~ 10 has a stepped-socket-shaped portion ~~37~~ 33 that has a larger-diameter part ~~38~~ 34 and a smaller-diameter part ~~39~~35. The larger-diameter part ~~38~~ 34 accommodates the nut ~~34~~ 30 of the locking element ~~32~~28. The smaller-diameter part ~~39~~ 35 defines a central aperture ~~40~~ 36 through which the spigot-shaped portion ~~33~~ 29 of the locking element ~~32~~ 28 extends as a running fit.

It will be appreciated that rotation of the plate 5 about the axis ~~9~~ 8 is enabled by the running fits of the spigot-shaped portion ~~33~~ 29 of the locking element ~~32~~ 28 and the broad shaft-portion ~~8~~ 7 in the apertures ~~40~~ 36 and ~~36~~32, respectively. In a further embodiment (not shown) the spigot-shaped portion ~~33~~ 29 and the broad shaft-portion ~~8~~ 7

may be provided with bearings to facilitate rotation of the plates ~~6~~ 5 and ~~7~~6. Furthermore, seals (not shown) may be provided to retain lubricant at positions where one surface rotates on another.

A reciprocatable piston ~~41~~ 37 is slidably mounted within each cylinder ~~10~~9. Each piston moves along a respective straight piston axis ~~42~~38. Axes ~~42~~ 38 each extend radially outwardly perpendicular to the crank axis ~~9~~ 8 and lie in a common plane. One side of each piston ~~41~~ 37 forms part ~~43~~ 39 of a combustion chamber. On the other side of each piston ~~41~~37, there is attached one end ~~44~~ 40 of a connecting rod ~~45~~41. The connecting rods ~~45~~ 41 extend along the complementary bores ~~16~~ 15 in the engine block and are laterally supported by the sidewalls ~~18~~17. It will therefore be understood that the connecting rods ~~45~~ 41 are angularly immovable relative to the respective piston axes ~~42~~38.

Each connecting rod ~~45~~ 41 has an opposite free end ~~46~~ 42 and an aperture ~~47~~ 43 adjacent the free end. A respective cam follower in the form of a pin ~~48~~44, is located in each aperture ~~47~~43. Each pin ~~48~~ 44 has opposite free ends and a central portion between the ends. The central portion of each pin is located in the apertures and the pin free ends project through the slot ~~19~~ 18 and into the groove ~~27~~26.

In use, each piston ~~41~~ 37 is powered in a manner conventionally employed in internal combustion engines (although the cylinder heads and the intake and exhaust valves and/or ports are not shown in the drawings). The resulting reciprocating motion of the pistons ~~41~~ 37 along their respective piston axes ~~42~~ 38 involves corresponding motion of the connecting rods ~~45~~41. It should be noted that the slots ~~19~~ 18 extend substantially

parallel to the respective piston axes ~~42~~38. Thus, when the pistons ~~41~~37 reciprocate, the free ends of the cam-follower pins ~~48~~44 traverse the slot ~~19~~18 and cammingly engage the walls ~~26~~25. In the present, preferred embodiment, each pin ~~48~~44 has a shoe at each of its free ends for engaging and guiding the pin along the walls ~~26~~25. However, in another embodiment (not shown) each pin ~~48~~44 is equipped with a roller for rolling along the walls ~~26~~25.

The timing of the piston movement and the specific configuration of the grooves ~~27~~26 are such that the pistons ~~41~~37, via the connecting rods ~~45~~41, drive the plates ~~6~~5 and ~~7~~6 in rotation about the crank axis 98, with the walls ~~26~~25 acting as cam surfaces in engagement with the cam follower pins ~~48~~44.

An alternative embodiment of the invention is illustrated in Figures 19, 20 and 21, where corresponding reference numerals indicate corresponding features. For the sake of simplicity, a two-cylinder embodiment is shown with the cylinder heads and the fuel/air intake manifolds omitted. The grooves are shown as slots extending completely through the cam plates to enable ease of understanding of the assembly.

This embodiment functions essentially in the same manner as the embodiment described above. However, in this embodiment, a linear slider bearing ~~50~~46 is fixedly connected to the free end of each connecting rod ~~45~~41. The bearing includes a prismatic body ~~51~~45 having an aperture (not shown) through which a respective one of the pins ~~48~~44 extends. Each one of the pins extends beyond the extent of the body and into the plate grooves ~~28~~26. The bores ~~16~~15 in the engine block are complementary with the shape of the bearings and extend completely through the web 4 to define a slot ~~53~~49. Therefore,

the bores have sidewalls perpendicular to the plane of the web. This configuration simplifies manufacture of the engine block, while maintaining the lateral support for the connecting rods.

The configuration of the engine 1 in the embodiments described above is such that it is suitable for use as a two-stroke engine or a four-stroke engine.

Because the connecting rods ~~45~~ 41 are guided in the bores ~~16~~15, the lateral reaction forces exerted by the plates ~~6~~ 5 and ~~7~~ 6 on the cam-follower pins ~~48~~ 44 is not communicated to the pistons ~~41~~37. Accordingly there is no specific requirement for the pistons ~~41~~ 37 to be capable of withstanding the bending moments that may occur in conventional engines. Therefore, the piston skirts present in conventional engines can be reduced in length or omitted entirely, as in the embodiment being described.--

Please replace the paragraph beginning at page 8, line 10 – line 24, with the following rewritten paragraphs:

--A further advantage of the arrangement envisaged by the present invention is that the grooves ~~27~~ 26 could be configured for each piston ~~41~~ 37 to reach top dead centre twice for every single revolution of the plates ~~6~~ 5 and ~~7~~ 6 and hence of the output shaft ~~8~~7. This may permit greater compactness, as the stroke would effectively be doubled without increasing the physical size of the engine.

It will be appreciated that the features of the present invention, at least in preferred embodiments, provide an effective way of achieving the cam-and-follower structure required for a radial engine of the present type. Notable among these features are the opposed walls ~~26~~ 25 which form an integral part of the cam plates ~~6~~ 5 and ~~7~~6, the grooves ~~27~~ 26 defined by these walls, the bores ~~16~~ 15 in the engine block 2 and the slots

~~19~~ 18 in the sidewalls ~~18~~ 17 through which the cam follower pins ~~48~~ 44 extend. These features provide a relatively simple balance between, on the one hand, the desired conversion from translational motion of the pistons ~~41~~ 37 to rotational motion of the crank ~~5~~ with the pistons being aligned with one another for compactness, and on the other hand, effective lateral support of the connecting rods ~~45~~ 41 and minimisation of bending moments on the pistons.--